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ENGELMANN SPRUCE BEETLE CONDITIONS

FOREST SERVICE REGION 4

November 1962

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Entomologist



BRANCH OF FOREST INSECT AND DISEASE
PREVENTION AND CONTROL

DIVISION OF TIMBER MANAGEMENT

Forest Service
U. S. Department of Agriculture
Ogden, Utah

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INTRODUCTION

This report presents current information on Engelmann spruce beetle, (Dendroctonus engelmanni Hopk.), activity in the Engelmann spruce stands, U. S. Forest Service, Region Four.

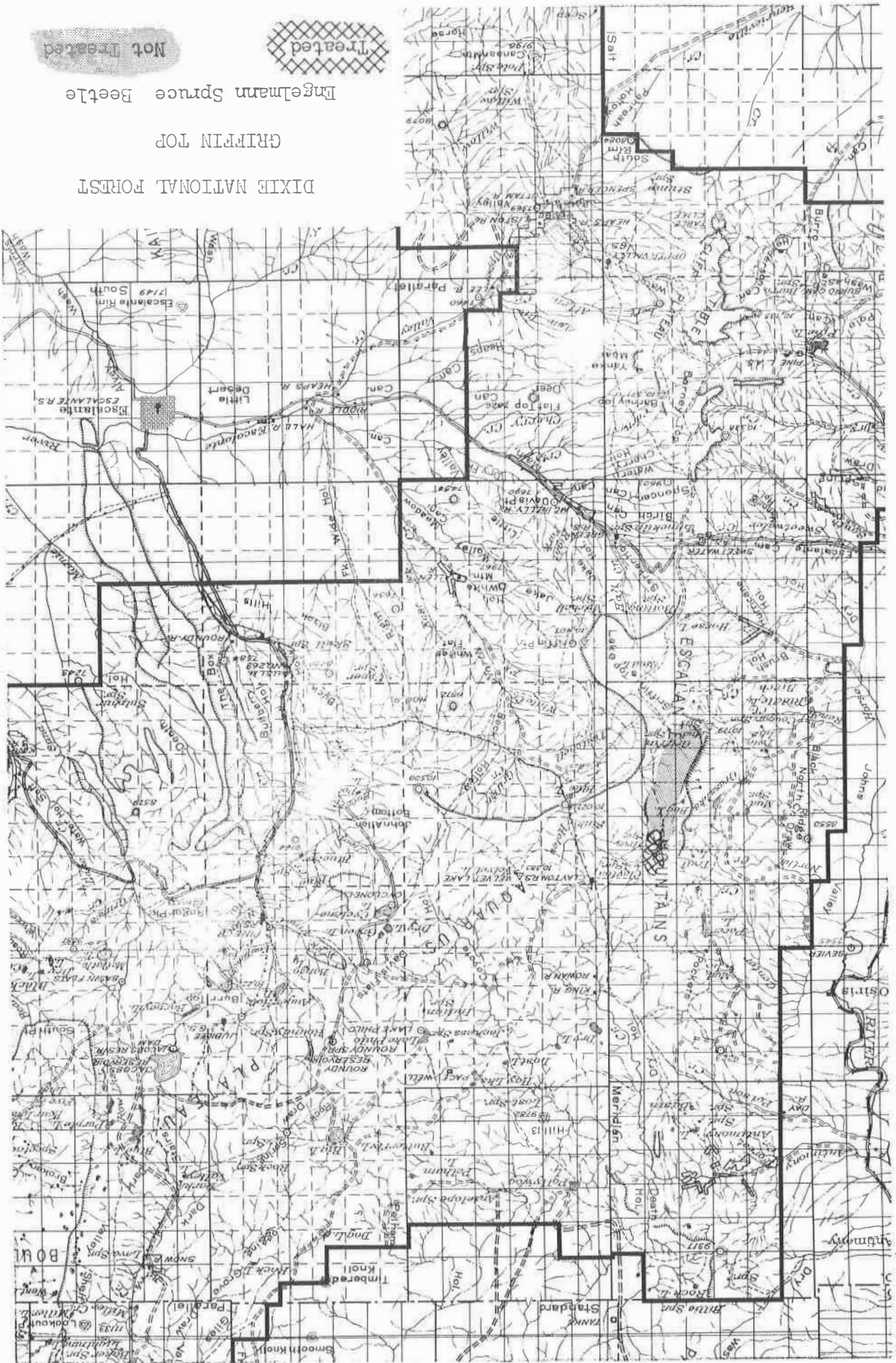
At the present time, six infestation centers are found on six separate forests throughout the Region. The most serious infestations occur on the Dixie and Bridger National Forests, and of these two, the Dixie infestation is the newest and most active.

In the past three years aerial observers have noted a rather slow but steady increase in the numbers of faded dead spruce trees on the Teton, Fishlake, and Payette National Forests. This situation connotes increasing levels of activity but still appears to be endemic in nature.

Dixie National Forest

This year the aerial survey detected a new center of Engelmann spruce beetle activity northwest of Griffin Springs on the rim of the Aquarius Plateau. Biological evaluations in August confirmed the presence of an epidemic infestation on about 1,000 acres. Nearly all of the beetle population was in standing, green trees, but a few scattered blowdown trees were also infested. The outbreak is located in an area where timber had been cut on a selective basis some five to six years ago. Previously forest personnel and entomologists from the Region had examined the area along with other cutover areas on the south end of the Aquarius Plateau for three consecutive years after cutting. Since no evidence of accelerated beetle activity was discovered in this period, the annual examinations were discontinued. Unfortunately, some scattered blowdown took place two years ago, followed by more last year. In addition, some trees were broken by the same winds. This material fell mostly in the shade, providing suitable host material for the bark beetles. Many standing, green trees were attacked last year and became visible from the air for the first time this fall. The beetles have developed an epidemic population and are expected to increase rapidly if left untreated. Fall operation surveys estimate 6,000 trees are currently infested. Plans have been made to suppress this epidemic infestation by a combination of salvage logging and chemical treatment, and the logging is well underway at the time of this writing.

Last year Dixie National Forest personnel reported Engelmann spruce beetle activity in the vicinity of the old Iron Springs sale. Biological evaluations disclosed epidemic beetle populations were present. The Forest conducted a control program last fall consisting of salvage logging and chemical treatment of trees and parts of trees not loggable. This prompt action reduced the Engelmann spruce beetle populations in the area to a low level.



Not Treated

Treated

Engelmann Spruce Beetle

GRIFFIN TOP

DIXIE NATIONAL FOREST

Bridger National Forest

During the past year, an all-out suppression effort was directed against Engelmann spruce beetle populations in the upper Green River Engelmann spruce stands on the Bridger National Forest in western Wyoming. Over 63,000 trees were treated with toxic chemicals in FY 1963.

In the project area both one and two-year strains of Engelmann spruce beetle populations exist. Last spring, hibernating adult beetles emerged and made their attacks. The beetle flight this year was larger than last year; consequently, many more trees were infested during the 1962 attack period. Populations of Engelmann spruce beetle which will hibernate this winter are relatively few in number, and flights and attacks next year should be considerably lower than occurred this year. During the last few years, Medetera sp. population centers have been found within infested areas; however, this predator did not increase significantly during the past year.

Woodpecker populations have been heavy within control units the last few years. These birds materially reduced spruce beetle populations in some areas last year. We feel they will continue their activity for at least another year.

The combined effect of this year's chemical treatment, accelerated woodpecker activity, and a light flight year should nearly eliminate the need for additional treatment next year, except for incidental cleanup.

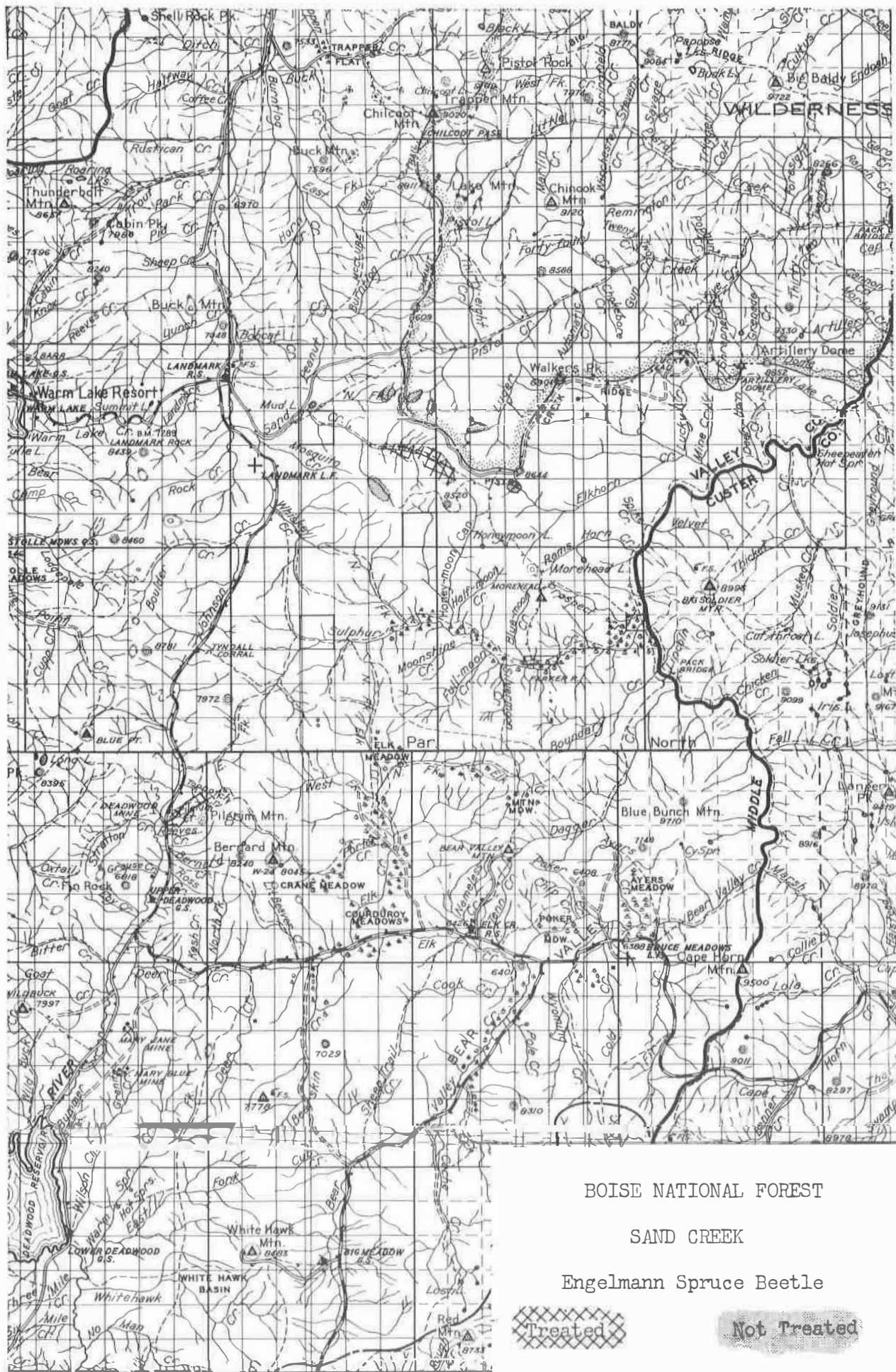
Boise National Forest

Last year a small Engelmann spruce beetle infestation was detected in Sand Creek on the Boise National Forest. At that time, even though brood densities were low, it was predicted that the overall trend favored a slight increase in spruce beetle activity. In an effort to curb the possibility of the infestation spreading, a salvage sale was made.

This year no successfully attacked, standing, green trees could be found within the infestation boundaries. Stumps left from a previous timber sale contained small populations of spruce beetles. Trees attacked in 1961 were partially filled in with 1962 brood. At the present time, the infestation appears to be stabilized and increased losses are not expected next year. The predicted increasing trend has been reversed by natural control factors. Probably the most important factor in brood reduction was the heavy woodpecker work. These birds had, in many cases, completely removed the bark from attacked trees above the three to four foot level. In addition, a high incidence of the predator, Medetera sp., was found to be active in the infested trees.

While the evaluation this summer showed the infestation has decreased slightly, the forest was encouraged to continue with the salvage operation. It is expected that salvage logging plus removal of green susceptible trees will further reduce Engelmann spruce beetle populations and forestall any buildup in the near future. Prompt slash disposal is planned to further reduce the chance of beetle buildup.

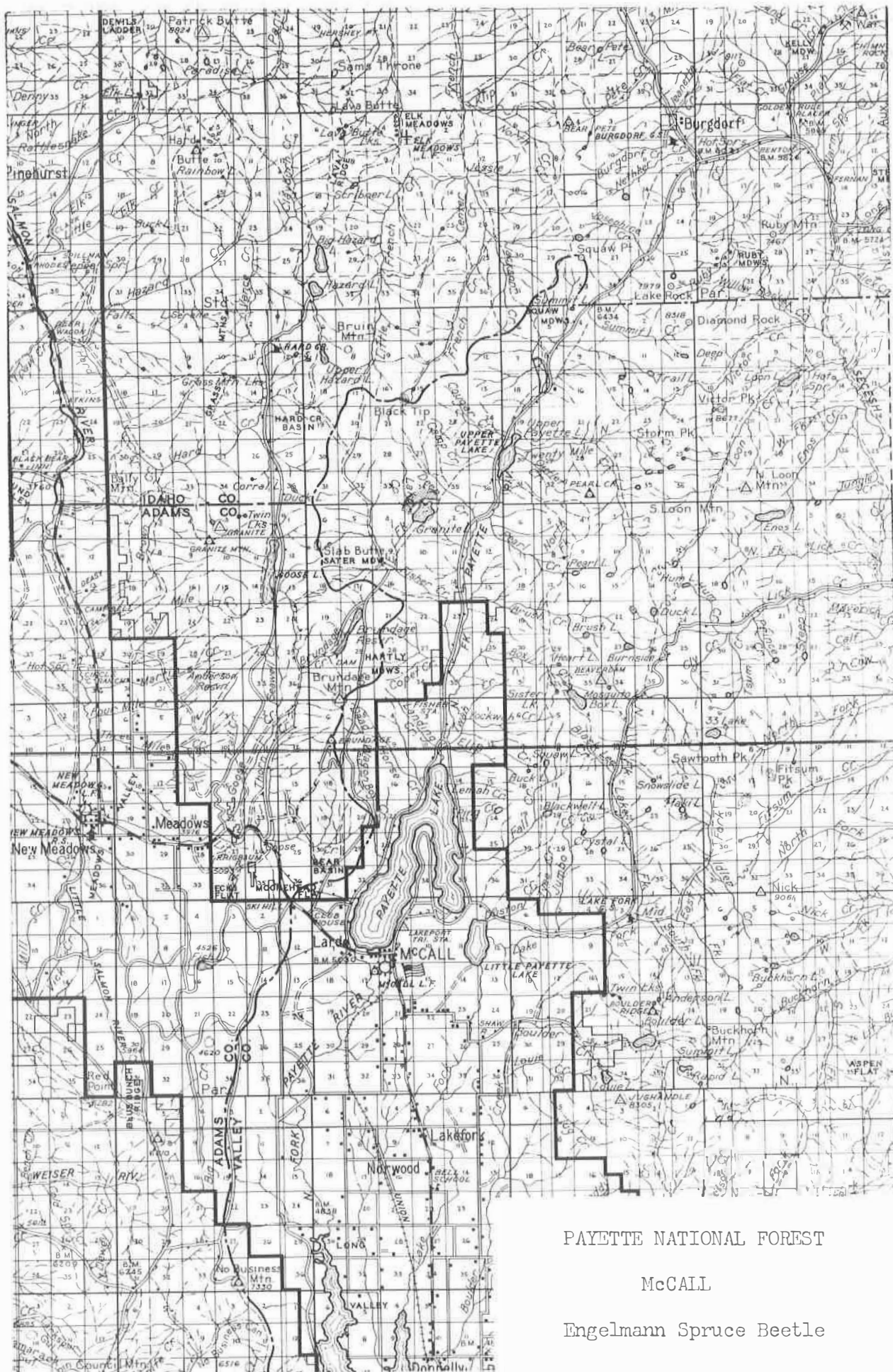
This fall, aerial observers detected several small pockets of faded Engelmann spruce grouped along the tops of the drainages adjacent to Sand Creek. Biological evaluations were not made in these infested pockets because they did not appear serious. However, a thorough ground check and evaluations will be made after beetle flight next year.



Payette National Forest

In 1959 an infestation of Engelmann spruce beetle was located on the shores of Granite Lake, northwest of McCall, Idaho. Chemical treating the following two years effectively suppressed this infestation. This year an evaluation was made at the request of the Payette National Forest. Approximately 50 newly infested trees were found. It was determined that the brood density was light and the infestation static. A logging program to increase the area of lakeshore has been undertaken and a considerable amount of spruce slash is now on the ground. This situation presents an opportunity for the beetle population to build back up unless the infested trees and slash are removed.

The Brush Creek logging area and the Hazard Lake road right-of-way have static infestations of Engelmann spruce beetles. At this time these infestations show no evidence of increasing tendencies; but the trend could be reversed if slash on the logging areas and right-of-ways is allowed to accumulate.



PAYETTE NATIONAL FOREST

McCALL

Engelmann Spruce Beetle

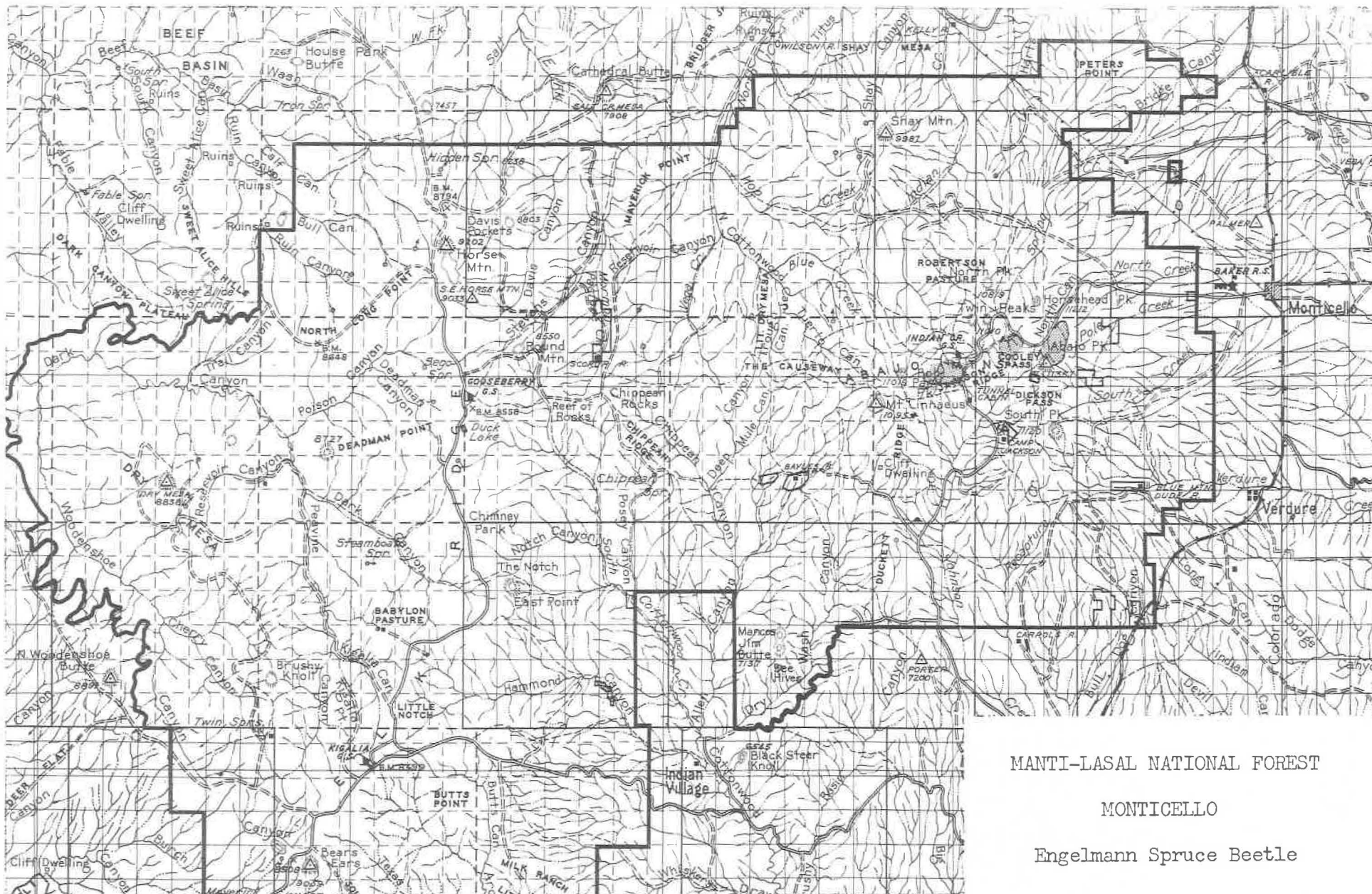
Manti-LaSal National Forest

Several ground evaluations of Engelmann spruce beetle conditions were made on the Monticello Ranger District in 1962.

Early spring evaluations showed woodpeckers were prevalent. Many of the attacked trees had been stripped of bark from the uppermost areas of infestation to the basal snowline. Checks under the bark below snowline and under residual bark patches above the snowline revealed relatively large larval populations of the dipterous predator, Medetera sp.

Another evaluation was made in the same areas in July. At that time, hibernating adults were emerging and making limited attacks in wind-thrown trees and at the bases of previously strip-attacked spruce trees. Attack density was classed as light.

A final examination was made in early October. Weakened trees and down material were being attacked but populations did not appear dense enough to constitute a hazard to the surrounding stand. No new (1962) attacks were noted in standing trees.



MANTI-LASAL NATIONAL FOREST

MONTICELLO

Engelmann Spruce Beetle

Teton National Forest

Increased fading caused by the Engelmann spruce beetle has been observed on the Teton National Forest for the past three years. The situation is not considered epidemic, but the increased number of scattered, infested trees represents a nucleus for possible future buildup.

This year, several areas of recent windthrow in spruce type were detected from the air. Most of these spots occur in the Teton Wilderness Area. Largest of the blowdown areas is a section between Senecio and Jay Creek. In this location, about 200 acres have been partially blown down. Scattered windthrow is evident in a southwesterly direction toward Enos Lake. Other areas of noticeable, scattered, spruce blowdown occur in Cub Creek, the South Fork of the Buffalo River drainage and on the west side of Fox Park. Downed trees appear to be in well-shaded locations. Past experience has shown that these conditions are very conducive to buildups of the Engelmann spruce beetle.

With a high resident beetle population, these blowdown areas should be examined carefully next year for evidence of beetle activity.

Fishlake National Forest

In November of 1961, a blowdown in Engelmann spruce was detected on the Hilgard Mountain on the Fishlake National Forest near Loa, Utah. The blowdown is approximately one and one-half miles long, two hundred yards wide, and extends from a ridgetop down both sides. Approximately 40 percent of this spruce stand has been windthrown.

Ground evaluations this fall indicated no Engelmann spruce beetle activity in the vicinity of the windthrown area. There are, however, other Engelmann and blue spruce stands within one-quarter mile of the windthrown timber.

This down timber may build an infestation in the next few years. It should be checked periodically for spruce beetle activity.

DISCUSSION

There are two large centers of Engelmann spruce beetle activity in the Intermountain Region. The newest epidemic is in southern Utah on the Dixie National Forest and the old persistent Upper Green River infestation is still active on the Bridger National Forest. Four other areas have had epidemic populations in the recent past; however, their current status is static to declining.

During 1962, all-out control efforts were directed at reducing the Upper Green River Engelmann spruce beetle epidemic to tolerable levels. At the completion of this fall's project, over 63,000 trees had been treated. Total numbers of brood have been materially reduced by this action; however, the potential for increase may still be existent throughout the infested Engelmann spruce stands.

The Dixie National Forest infestation is in an area selectively logged several years ago. A program to reduce the beetle population through logging and chemical treatment was started this fall, as soon as possible after discovery.

For the third consecutive year an increase in spruce trees killed by endemic populations of the Engelmann spruce beetle has been noted during the annual aerial detection survey. This year many small groups (2-5 trees each) of faded spruce trees were found where last year only one or two trees were attacked. The most noticeable increases are on the Teton, Payette, and Fishlake National Forests.

Past history has shown that large-scale epidemics can develop from windthrow in Engelmann spruce stands. During the winter and spring of 1962, several areas suffered extensive damage from tornadic winds.

The blowdown areas vary considerably in intensity and gross acreage. For example, a large portion of one patch of spruce type was literally flattened on the Fishlake National Forest this spring. In contrast, several hundred acres of Engelmann spruce type on the Teton National Forest received scattered windthrow. In areas where scattered blowdown occurs, the trees are relatively well-shaded and it is in this environment that the Engelmann spruce beetle can build rapidly to epidemic proportions. All observable blowdowns have been mapped, described, and recorded for future observation.

In summary, most of the old epidemic centers in the Region have been reduced to tolerable levels by natural and artificial control. A general increase in endemic activity has been observed for the last three years in mature and overmature Engelmann spruce stands in the Region. Blowdown has occurred in widely scattered areas. These areas present opportunities for rapid population buildups of the Engelmann spruce beetle in the next one-to-two years.